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ARMY TECHNICAL INTELLIGENCE REVIEW

UNCLAS



Nº99

April 1971

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ARMY TECHNICAL INTELLIGENCE REVIEW No 99 (RESTRICTED)

APRIL 1971

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Cover Photograph:-

Chemical Defence Troops decontaminating 140 mm Rocket Launcher M-1965 (16 Rds)

ARMY TECHNICAL INTELLIGENCE REVIEW No 99 (RESTRICTED)

FOREWORD

It is pleasing to note that the number of our readers continues to increase, showing that we are meeting a real need. We are at present reviewing our distribution, with the aim of ensuring that copies of the ATIR reach every battalion/regiment. Please let us know if you have any difficulty in obtaining copies.

This edition sees the return of the Soviet Army Equipment Quiz, which has always proved popular in the past. Our thanks to the Intelligence Centre for their help.

Some recent staff changes have seen the G 1 Lt Col Roy Hurn depart for the Royal School of Artillery. His place has been taken by Lt Col Mike Westropp. Major Brian Faris has taken over the infantry/airborne desk - the first infanteer to hold the chair for many years. January saw Major Roger Bacon depart for command of a battery and Major David James replace him at the radar desk.



S C SMITH
Colonel
TECH INT (A)

1. UNDERWATER TRAINING FOR TANK CREWS IN THE WARSAW PACT COUNTRIES.

Description of a Training Centre (RESTRICTED)



Fig 1. T-62 With Combat Schnorkel

It is probably common knowledge that all modern Warsaw Pact country AFVs can either swim or schnorkel. This article looks at a modern training centre and describes some of the training that tank crew members undertake before being allowed to schnorkel their own tanks. It is emphasised that all tank crews and not just a specialised few have to become proficient in this type of training.

The training of tank crews in the art of schnorkelling is in two phases and is carried out in two separate units at the training centre. Phase I aims at teaching swimming and confidence in water when using escape masks and Phase II in training at the tank water drome.

The first phase of underwater training consists of:-

- a. swimming, diving, carrying out specific procedures and tasks under water while wearing the tank escape masks
- b. getting to know the correct signals and safety precautions while under water
- c. submerging and surfacing drills and the waterproofing of the tank itself.

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Because high morale is essential, emphasis is placed on having excellent facilities. These include good recreational grounds, a gas chamber for checking the sealing of the escape masks and a hall with a large and small pool which can be used all the year round for ensuring that tank crew members are all taught to swim. Everyone has to pass Phase I before they can be accepted for Phase II.

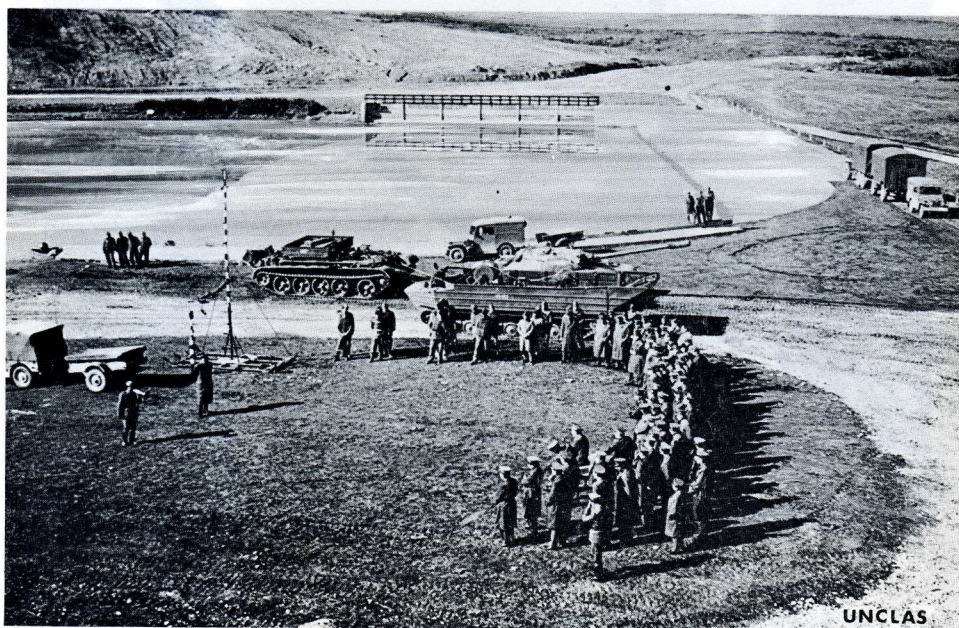


Fig 2. The Tank Water Drome showing Lake

For the second phase of underwater training a modern tank water drome is used. An artificial lake was constructed, the depth of which is 5 metres, this being the maximum depth in which tanks can snorkel. A total of three tank tracks were then built around and through the lake. The one around the lake is for normal driver training and the two through the lake are for under-water training. Of the two tracks through the lake, one is for learner drivers and the other for advanced drivers. The learner track is 12 metres wide and 250 metres long of which 90 metres are under water including an exit incline of 12-17 degrees. The advanced track is 25 metres wide and 470 metres long of which 150 metres are under water, with an incline at the exit of 17 degrees. Other facilities at the water drome include hard standings for checking the water sealing and underwater equipment of tanks, tank simulators to practise the rescue of crews in case of any failure under water, a communications centre and a headquarter tower for the control of all activities. The centre will shortly be building another tank track to practise crews in blind driving using their gyro semi-compass which is an essential instrument for keeping station when driving under water.

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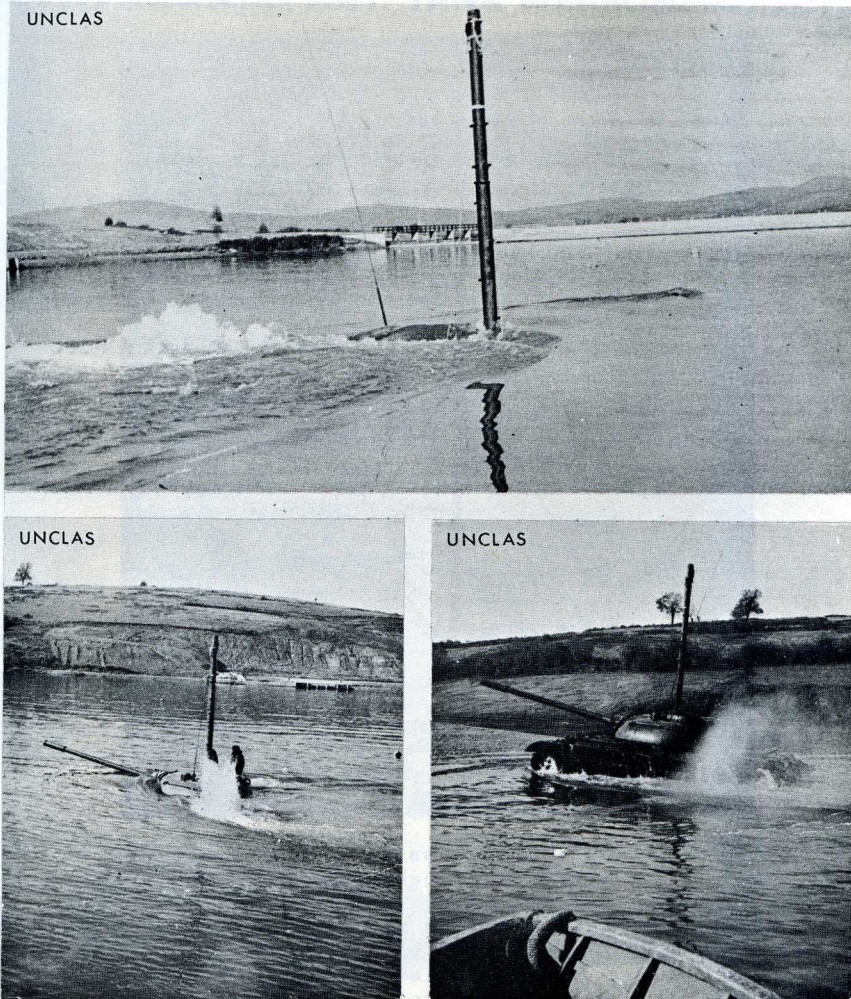


Fig 3. T-54 Tanks training at the Water Drome

It is evident from the above that the training centre provides for the complete training of crews in every activity which schnorkelling entails. Many other activities connected with water operations are also included.

Having completed training at the centre, tank crews will go to their permanent units, where they will put into practice their knowledge of crossing water obstacles.

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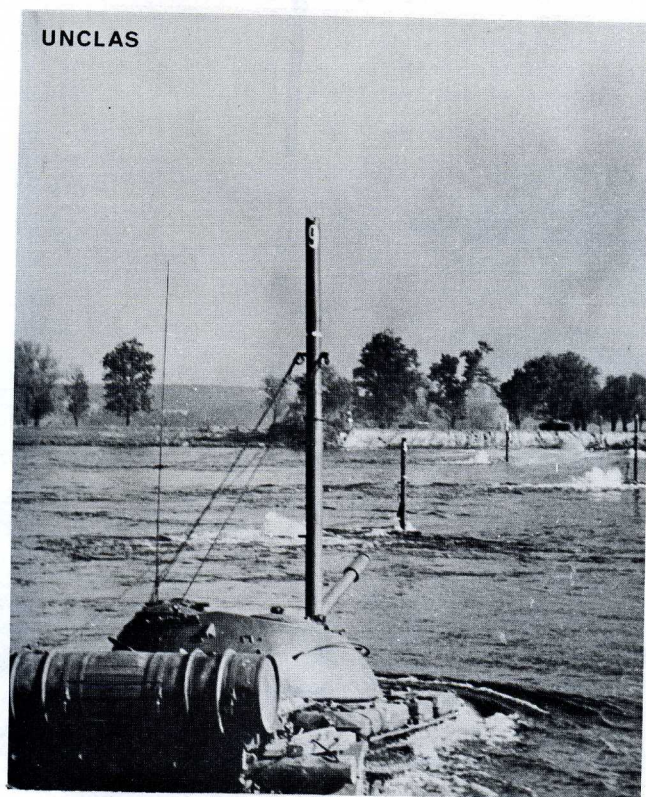


Fig 4. T-55 Tanks crossing a Water Obstacle with Combat Schnorkels.

You have just read a summary of an article which recently appeared in an open press publication from one of the Warsaw Pact countries. It has been included in this edition of the ATIR to emphasise that the Warsaw Pact countries do not just pay lip service to the art of schnorkelling. It is something that tank crews start training in as soon as they join the army. Great emphasis is always placed on safety, thus ensuring that morale remains high and tank crews are confident when schnorkelling. Every Warsaw Pact tank is capable of schnorkelling up to a depth of 5 metres, and all training points to the fact that it is considered to be a practical operation of war.

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2. SOVIET INFANTRY ANTI TANK WEAPONS (RESTRICTED)

General

In Soviet tactical doctrine the anti-tank weapon of any type plays a very important role. Soviet anti-tank weapons are provided from the individual soldier level through all known forms of anti-tank weapons to sophisticated anti-tank guided weapons.

Soviet Infantry anti-tank weapons can be divided into five categories:

Anti-tank Hand Grenades

Hand held Recoilless Weapons (Anti-Tank Grenade Launchers)

Towed Recoilless weapons

Anti-tank guns

Anti-tank guided weapons

The scope of this article does not cover the last two groups.

Anti-Tank Hand Grenades

RPG-6

The RPG-6 is a shaped charge grenade primarily for use against tanks, but as the grenade fragments it can also be used as an anti-personnel weapon. The grenade explodes on impact. Possibly still in service with Soviet and Satellite armies.

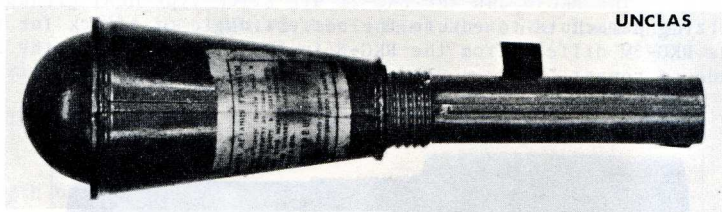


Fig 1. RPG-6 Anti-Tank Hand Grenade

Characteristics

Weight fuze	1.1 kg	2.43 lb
Length	343 mm	13.5 in
Diameter	102 mm	4 in
Wt. of HE filler	562 gram	19.48 oz
Fuze type	Impact	
Average range thrown	15 to 20 m	16.5 - 22 yds
Penetration of armour (at normal)	100 mm	3.94 in

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RPG-43

The RPG-43 is a close combat anti-tank grenade. An instantaneous base fuze detonates the grenade on impact. Possibly still in service with Soviet and Satellite Armies.



Fig 2. RPG-43 Anti-Tank Hand Grenade

Characteristics

Weight fuze	1.20 kg	2.65 lb
Length	299 mm	11.8 in
Diameter	95 mm	3.74 in
Wt of HE filler	613 gram	1.35 lb
Fuze type	Impact	
Average range thrown	15 to 20 m	16.5 - 22 yds
Penetration of armour (at normal)	75 mm	2.95 in

RKG-3 and RKG-3M

The RKG-3M is the standard anti-tank hand grenade of the Soviet and Satellite Armies. The RKG-3 and the RKG-3M are stick type HEAT grenades which use a stabilizing parachute to ensure the correct angle of attack for the warhead. The RKG-3M differs from the RKG-3 in that the lining of the shaped charge is made of copper.

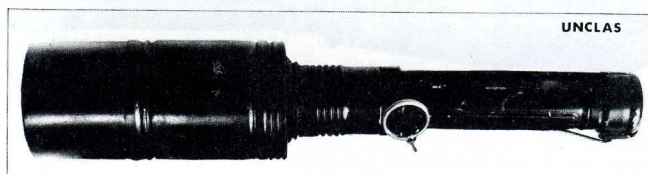


Fig 3. RKG-3 and RKG-3M Anti-Tank Hand Grenade

Characteristics

Weight fuze	1.07 kg	2.4 lb
Length	362 mm	14.25 in
Diameter	55.6 mm	2.19 in
Wt of HE filler	567 gram	1.25 lb
Fuze type	Impact	
Average range thrown	15 to 20 m	16.5 - 22 yds
Penetration of armour (at normal)	125 mm	4.9 in

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Hand Held Recoilless Weapons

Anti-Tank Grenade Launcher RPG-2

The RPG-2 is a very light and effective close range recoilless anti-tank grenade launcher. Although it has probably been replaced in the Soviet Army by the RPG-7 it is still found in service with Satellite armies. The RPG-2 fires a projectile the head of which is much larger than the body of the weapon itself. It is muzzle loaded.



Fig 4. RPG-2 Anti-Tank Grenade Launcher

Characteristics

Calibre (Launcher)	40 mm	
(Projectile)	80 mm	
Length of launcher	950 mm	37.4 in
Wt of launcher	2.83 kg	6.23 lb
Wt of projectile	1.5 kg	3.3 lb
Muzzle velocity	84 metres/sec	276 ft/sec
Max effective range	150 m	165 yds
Ammunition	HEAT	
Penetration of armour	152 mm - 180 mm	6 - 7 in

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Anti-Tank Grenade Launcher RPG-7

This weapon is the successor to the RPG-2, and is the standard section anti-tank weapon in the Soviet Army. It is also found in Satellite armies. It is similar in concept to the RPG-2. The RPG-7 has an optical sight and fires a rocket assisted projectile. The initial normal propellant charge launches the projectile and several metres in front of the muzzle the rocket motor cuts in, increasing the velocity. This gives the projectile greater range, a flatter trajectory and increased accuracy. The weapon is muzzle loaded as the diameter of the grenade is greater than that of the launcher.

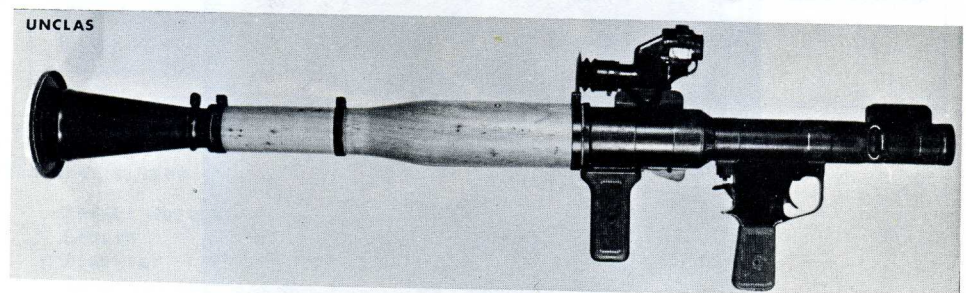


Fig 5. RPG-7 Anti-Tank Grenade Launcher

Characteristics

Calibre (launcher)	40 mm	
(projectile)	85 mm	
Length of launcher	1000 mm	39 in
Wt of launcher	7 kg	15.5 lb
Wt of projectile	2.3 kg	5.1 lb
Muzzle velocity	100 metres/sec	328 ft/sec
Max velocity	300 metres/sec	984 ft/sec
Effective range	500 m	546 yds
Ammunition	HEAT and HE	
Penetration of armour	300 mm	11.8 in

Towed Recoilless Weapons

Soviet 82 mm Recoilless Anti-Tank Gun B-10

In the Soviet Army, this weapon is now found only in the Airborne Division at battalion level but it is used by many Satellite armies. For travelling, the B-10 is mounted on two wheels and man towed by means of a bar attached to the muzzle. A tripod, carried folded under the barrel when travelling, is lowered for firing. The weapon can be fired from the wheeled mount.

Towed Recoilless Weapons

Soviet 82 mm Recoilless Anti-Tank Gun B-10 (Continued)



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Fig 6. B-10 Recoilless Anti-Tank Gun

Characteristics

Calibre	82 mm	
Length of barrel	1659 mm	65.3 in
Weight	88 kg	193 lb
Muzzle velocity	320 metres/sec	1050 ft/sec
Max range	HE 4470 m	4890 yds
Effective AT range HEAT	390 m	430 yds
Wt of projectile HE	4.5 kg	10 lb
HEAT	3.6 kg	8 lb
Penetration of armour	300 mm	11.8 in

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Summary

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Summary of Range and Penetration

Weapon	Range against Armour	Penetration of Armour
RPG-6 Anti-tank Hand Grenade	15-20 m	100 mm
RPG-43 " " " "	15-20 m	75 mm
RKG-3 and 3 M " " "	15-20 m	125 mm
RPG-2 Anti-tank Grenade Launcher	150 m	152 mm - 180 mm
RPG-7 " " " "	500 m	300 mm
82 mm Recoilless Anti-tank Gun B-10	390 m	300 mm

Conclusion

Soviet infantry are very well equipped with anti-tank weapons down to section level. In addition to the weapons described the Soviets have an efficient family of anti-tank guided weapons and anti-tank guns. The Soviet Marshals may subscribe to the theory that the best form of anti-tank defence is the tank but they have certainly planned for all eventualities.

In a future edition an article will be produced on Warsaw Pact countries anti-tank weapons.

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3. YUGOSLAVIA-NEW FAMILY OF SMALL ARMS (UNCLAS)

7.62 mm SMG M64A

This weapon is the first of a new family of small arms automatic weapons from the "Crvena Zastava" (FAZ) factory in KRAGUJEVAC. The design is based on the AK-47 but with a large number of supplementary features. Individual components have been made in accordance with new designs, changes have been made in the mechanism and certain improvements have been introduced.

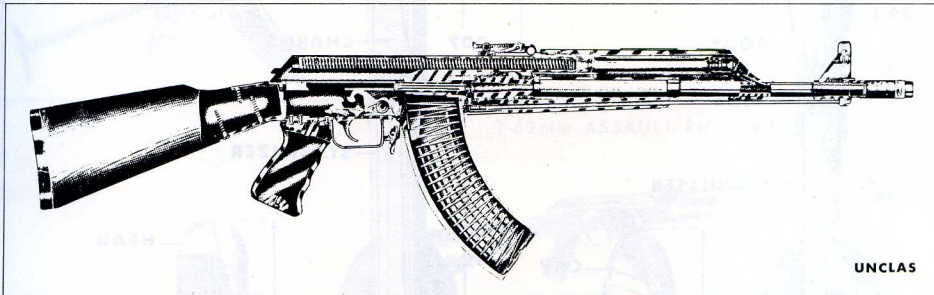


Fig 1. 7.62 mm SMG M64A. (Cutaway Diagram)

This SMG and all weapons of the new family use a short 7.62 mm round. It is a light weapon with high fire power and an effective range of up to 400 m. A grenade discharger can be fitted on the end of the barrel (this is carried separately) and the SMG is provided with a special sight for firing grenades. All moving parts are simple and robust and designed to stand up to all weathers.

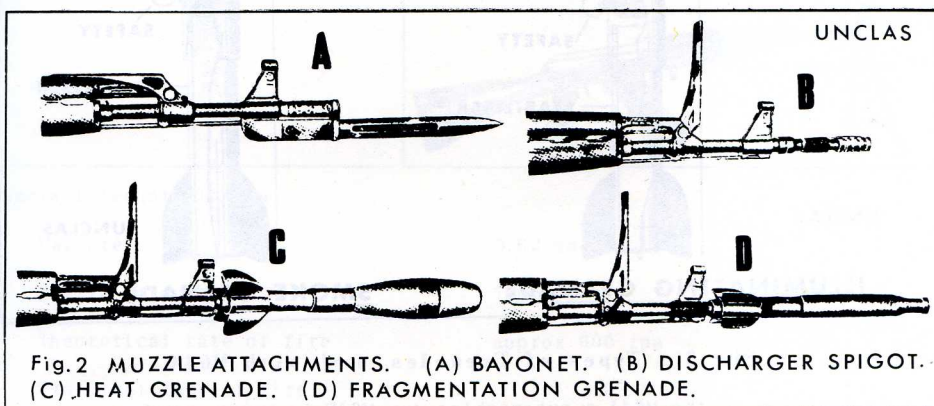


Fig.2 MUZZLE ATTACHMENTS. (A) BAYONET. (B) DISCHARGER SPIGOT. (C) HEAT GRENADE. (D) FRAGMENTATION GRENADE.

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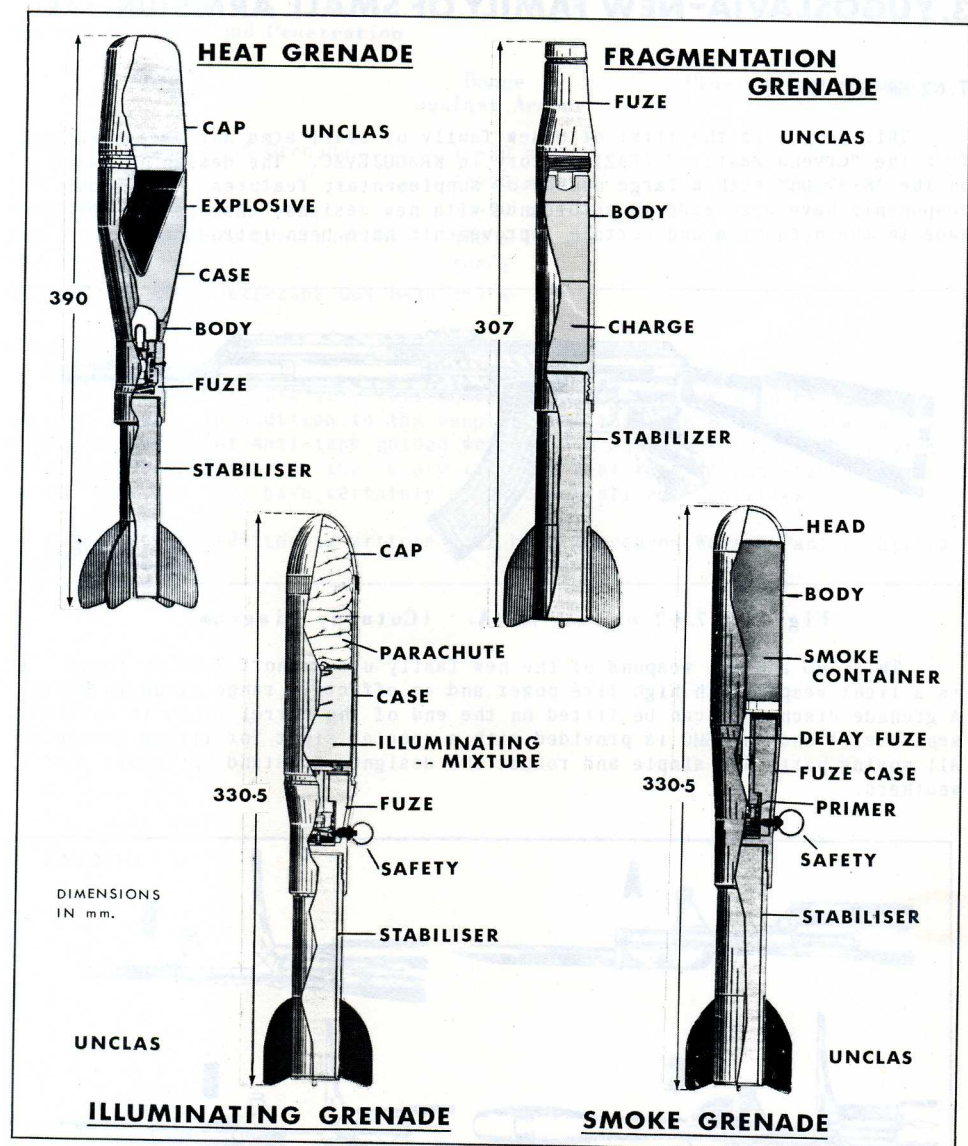


Fig 3. Types of Grenades used with M64A

In addition to the M64A a sub-machine gun M64B is being manufactured. The B version differs from the A version only in that it has a folding metal stock and that it cannot fire grenades.

Fig. 4
COMPLETE SERIES
OF WEAPONS.

7.62mm SMG M64A



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7.62mm SMG M64B (FOLDING BUTT)



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7.62mm ASSAULT RIFLE M64



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7.62mm LMG M65A



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7.62mm LMG M65B



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Principal technical data

Calibre	7.62 mm	
Muzzle velocity	700 m/sec	2,297 ft/s
Theoretical rate of fire	approx 600 rpm	
Practical rate of fire	" 120 "	

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4. EAST GERMAN DECONTAMINATION EQUIPMENT EA-65 (RESTRICTED)

General Description

The EA-65 decontamination set is used for all types of decontamination. It is based on a pressurised container holding some 40 litres of decontaminant. Each cylinder is held in a frame and is issued complete with hose and brushes. (Fig 1). Sixteen of these decontamination sets are carried in the back of an LO-1800A truck. The cylinder frame enables it to be secured in its mounting in the vehicle and facilitates transport in the field. Along each of the sideboards seven decontamination sets are secured vertically and two in the horizontal position on the floor. A compressor is secured behind the driver's cab and can be operated from this position.

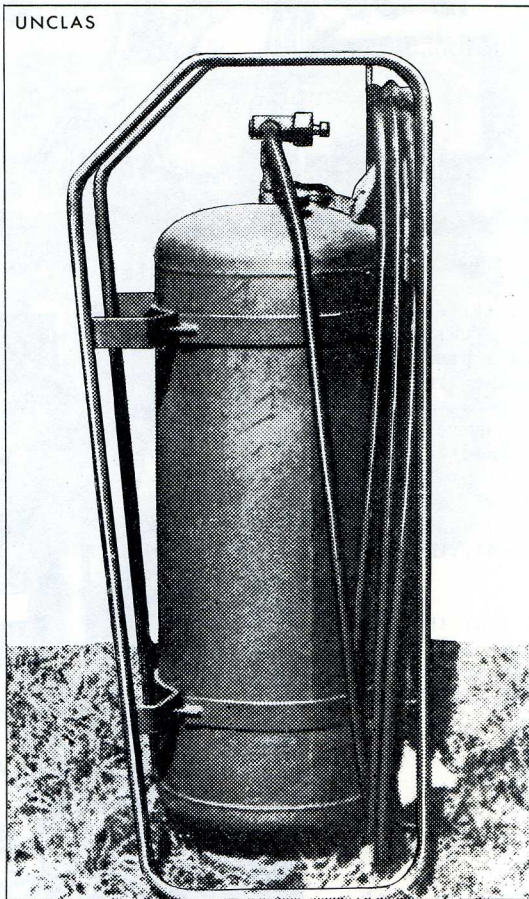


Fig 1. Complete Single Unit

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Operation

The equipments are loaded and unloaded from the truck by guide rails in the centre of the vehicle and a ramp which fits over the tail board (Fig 2). Each equipment can be operated independently of the others and when full weighs 85 kg (186 lb). The cylinder is pressurised to a maximum of 6 k/cm^2 (6 atmospheres).

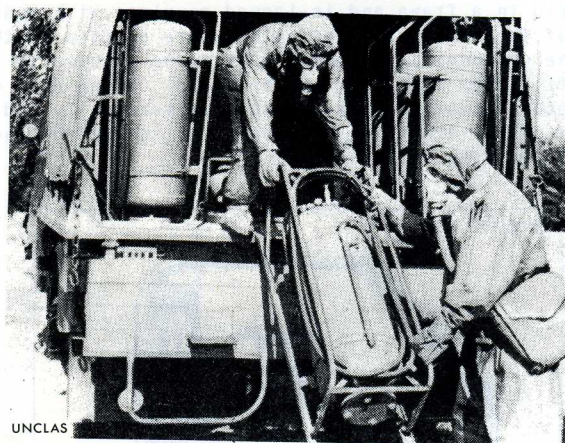


Fig 2. EA-65 Decontamination Set on a Truck

Each cylinder is filled from a normal decontamination vehicle such as the ARS-12U and then pressurised by the compressor on the truck.

The decontamination set is probably held by the Chemical Defence troops and will probably be used to replace earlier decontamination sets such as the large GES-10, the TEG-57, the EA-61 and the EA-64.

It would appear that the EA-65 is a development of the earlier Soviet decontamination set DKV which was described in ATIR No 98.



Fig 3. Decontamination with the E-65

5. MODERN VEHICLES FOR THE SOVIET ARMY (RESTRICTED)

Several vehicles have recently appeared in the Soviet Army and so it is appropriate to have a brief summary of the newer vehicles that are now in service. The Soviet Army is equipped with a wide range of vehicles ranging from the smallest, the GAZ-69, to the large 8 x 8 vehicles of the MAZ family. The Soviet motor industry is extremely large and active and provides a comprehensive selection of vehicles for the Soviet Armed Forces.

GAZ-66

The GAZ-66, the replacement vehicles for the GAZ-63 series, is readily identified by its cab over engine styling. This truck features an improved V8 engine and a limited slip differential. It has been seen with a canvas top to the cab and a folding windscreen. Both features add to its air transportable characteristics. A winch can also be fitted.



Fig 1. GAZ-66

Technical Characteristics

Payload	2,000 kg (1.97 tons)
Drive	4 x 4
Engine a.	115 hp at 3,200 rpm
b.	V8 petrol
Top speed	95 kph (59 mph)
Length	5.655 m (18.6 ft)
Width	2.342 m (7.68 ft)

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ZIL-131

The ZIL-131 is the successor to the well proven and tried ZIL-151/157. It embodies many of the components of the earlier vehicle but has a new engine, improved transmission and a new steering system similar to that of The ZIL-130. It has been used as a chassis for a variety of body styles and roles. Its main characteristics are as follows:



Fig 2. ZIL-131

Technical Characteristics

Payload	5,000 kg (4.95 tons)
Drive	6 x 6
Engine a.	150 hp at 3,200 rpm
b.	V8 petrol
Top speed	80 kph (50 mph)
Length	6.900 m (22.7 ft)
Width	2.500 m (8.25 ft)

URAL -375

One of the main vehicles of the Soviet Armed Forces is the URAL-375. It has a high body line, a schnorkel type air intake, which extends some 6 ft above the ground and an extension which can be attached to the exhaust pipe. These features give this vehicle a good fording capability. The heated cab can seat three and can have either a fixed or a folding windscreen and either a fixed or canvas top to the cab. The vehicle can tow a trailer with a total weight of 5 tons over dirt roads and across country. It is normally fitted with a winch. Its main characteristics are:

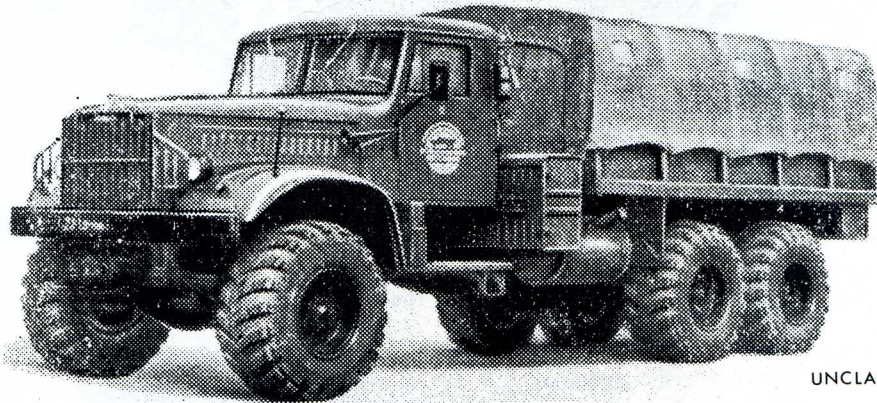
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URAL-375 (Continued)**Technical Characteristics**

Payload	4,500 kg (4.42 tons)
Drive	6 x 6
Engine a.	180 hp at 3,200 rpm
b.	V8 petrol
Top speed	75 kph (46.5 mph)
Length	7.35 m (24.1 ft)
Width	2.69 m (8.84 ft)

**Fig 3. URAL-375****KrAZ-255 B**

This truck is a direct descendant from the KrAZ-214. It has a bigger engine with reduced fuel consumption, a strengthened chassis, improved suspension, hydraulic steering, wide profile tyres, and an improved cab. The wide profile tyres give it a good cross country performance. Its leading technical characteristics are as follows:

**Fig 4. KrAZ-255 B****Technical Characteristics**

Payload	7,500 kg (8 tons)
Drive	6 x 6
Engine a.	240 hp at 2,100 rpm
b.	V8 diesel
Top speed	71 kph (45 mph)
Length	8.530 m (28.2 ft)
Width	2.7 m (8.9 ft)

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URAL-377

The URAL-377 is a 6 x 4 version of the URAL-375. It is fitted with a wooden body and does not have the distinctive schnorkel of the all-wheel drive URAL-375. It has been developed primarily for civilian service but is able to provide good logistic transport for the Soviet Army. It has the same high body line and engine as the URAL-375 and appears very similar to it.



Fig 5. URAL-377

Its leading Technical Characteristics are:

Payload	7,500 kg (8 tons)
Drive	6 x 4
Engine a.	180 hp at 3,200 rpm
b.	V8 petrol
Length	7.600 m (25.1 ft)
Width	2.500 m (8.5 ft)

All these vehicles are fitted with a system of cab controlled tyre pressures allowing the best tyre pressure to be used in relation to the ground being crossed. This gives them a good cross country performance.

6. NEW POLISH RIBBON BRIDGE PP-64 (RESTRICTED)

The most recent floating assault bridge to appear in the Warsaw Pact countries is a new Polish pontoon equipment designated PP-64. This bridge uses the ribbon-type principle, so successfully developed by the Soviets in their PMP and, following the Rumanian, PR-60, is the third such bridge to come into service in eastern Europe.



Fig 1. PP-64 Pontoon on STAR 660



Fig 2. Pontoon being launched

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The bridge pontoons are carried on the Polish STAR 660 vehicle in an inverted V with the one fold line in the pontoon uppermost as shown in Figure 1. The pontoons are unfolded to the flat configuration on the back of the truck before launching directly into the water (Figure 2). Once in the water the pontoons are joined together with semi-automatic coupling devices, thus forming a continuous bridge with the upper deck of the pontoons as the roadway. The roadway of the bridge transverses the pontoon (as opposed to PMP where it runs longitudinally along the pontoon) as seen in Figure 3 below which also shows the approximate dimensions of the pontoon.

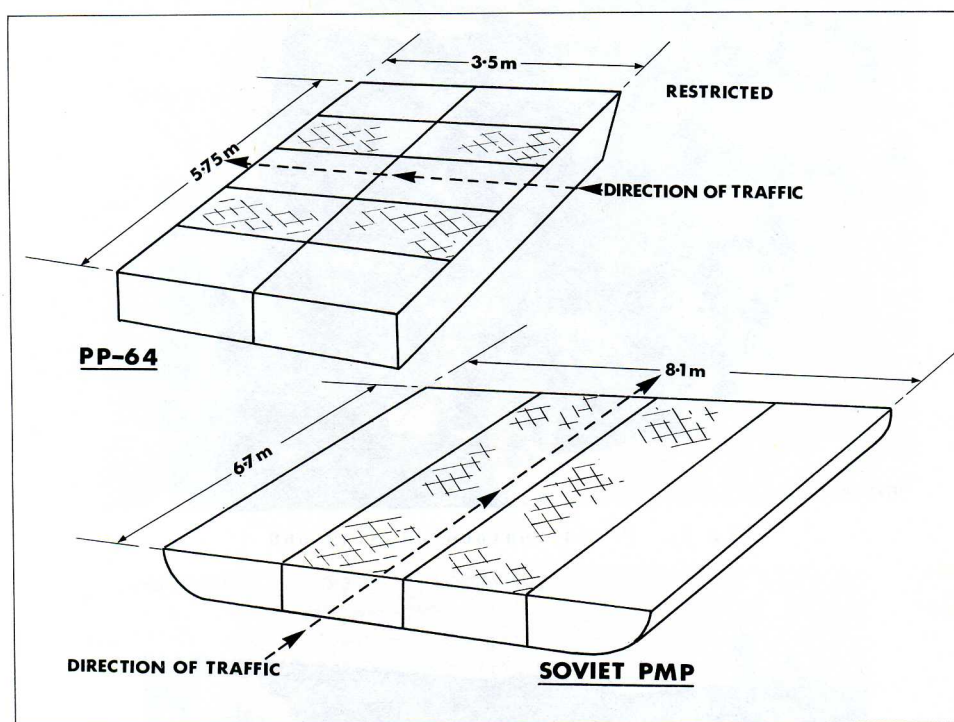


Fig 3. Comparison of PP-64 to Soviet PMP

The bridge can be built in half or full width versions with load classes 20 and 60 respectively, (Figs 4 and 5 page 25). To increase stability the half width configuration may be widened by adding extra pontoons at 20 to 30 metre intervals.

In comparing this new Polish bridge with the Soviet PMP we find that one truck load (KRAZ 214) of PMP gives 6.7 metres run of CL 60 bridge while it would require four truck loads (STAR 660) to form 7 metres of CL 60 PP-64 bridge, albeit somewhat wider and therefore presumably more stable than PMP. In addition PMP is constructed initially in the full width configuration while PP-64 must be joined together to form CL 60 bridge which undoubtedly means that the rate of construction of the Polish bridge will be slower than that of the Soviet bridge.



Fig 4. Class 20 Bridge (One way)



Fig 5. Class 60 Bridge (Two way)

Despite these relative deficiencies, which most probably have been the product of insisting on a wholly domestic product and thus limiting the size of pontoon to the capacity of the STAR 660, it is evident that the PP-64 is a rapid and effective assault bridging equipment. It has been used extensively on Warsaw Pact exercises and adds to the Bloc capability in assault water crossing.

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7. SOVIET ARMY EQUIPMENT QUIZ

Another in the series of questions and answers to test your knowledge of the Soviet Army and its equipment. These questions have not been designed to catch you out by using smart photographic tricks, but to give you brief glimpses of equipment which may well be seen in all parts of the world in the hands of Armies other than the Soviet, either copied, captured or purchased.

One of the photographs contains an excellent clue. See if you can spot it before reading the answers.

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1. What is this vehicle and what is its Gun and Role?



2. Heavens Above! What
is this



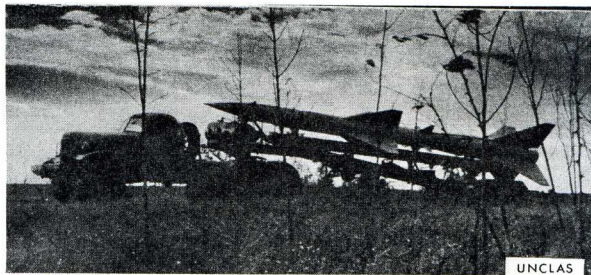
3. Do you recognise this?
Name and Function please



4. Old, perhaps but still seen. Give it a name.



5. Stand by Your - What?



6. A missile, but which one?

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The answers to the questions on the preceding pages are as follows: -

1. ASU-85. Gun 85 mm. Used by Airborne troops in an infantry support role. (The clue was the Airborne badge in front of the splash plate)
2. ZSU-23-4. AA Weapon found at regimental level in Soviet Army organisations
3. GSP Heavy Ferry class 50
4. T34/85 Medium Tank
5. ZSU-57-2. 57 mm SP Twin AA Guns
6. SA2, GUIDELINE